

WHAT IS CLAIMED IS:

1 1. A part measurement system comprising:  
2 a press machine including a lower die coupled to an upper die, wherein the  
3 lower die includes a top surface supporting a strip of material to be formed into a  
4 part after a stripper plate coupled to the upper die contacts the strip of material;  
5 a part measurement sensor located in the lower die, wherein the sensor  
6 measures a critical dimension of the part while the part is in the lower die;  
7 a part forming rail coupled to the lower die, wherein the forming rail and  
8 the upper die form the critical dimension of the part; and  
9 a press controller coupled to the press machine and the sensor, wherein the  
10 controller processes a measurement signal from the part measurement sensor of  
11 the critical dimension of the part, compares the measurement signal to a  
12 predetermined threshold value, and generates a command signal to the press  
13 machine to adjust the forming rail based on the measurement signal.

1 2. The measurement system according to claim 1, wherein the forming rail is  
2 coupled to a servo and the press controller adjusts the servo based on the  
3 measurement from the sensor of the critical dimension of the part.

1 3. The measurement system according to claim 2, wherein the upper die includes a  
2 knocker that contacts the forming rail to form the critical dimension of the part.

1 4. The measurement system to claim 1, wherein the sensor is an analog output  
2 proximity switch located in the lower die.

1 5. The measurement system according to claim 1, wherein the press machine is a  
2 progressive punch press.

1 6. The measurement system according to claim 5, wherein the sensor generates a  
2 first measurement signal prior to the upper die punching the strip of material and a  
3 second measurement signal after the upper die punches the strip of material

1 7. The measurement system according to claim 6, wherein the press controller  
2 generates an average measurement signal based on the first measurement signal  
3 and the second measurement signal.

1 8. The measurement system according to claim 7, wherein the press controller  
2 compares the average measurement signal to the predetermined threshold to  
3 determine whether to adjust the forming rail.

1 9. The measurement system according to claim 6, wherein the sensor generates the  
2 first measurement signal when the press machine is between 130 degrees and 150  
3 degrees.

1 10. The measurement system according to claim 9, wherein the sensor generates the  
2 second measurement signal when the press machine is between 180 degrees and  
3 360 degrees.

1 11. A part measurement system comprising:  
2 a press machine including a lower die coupled to an upper die, wherein the  
3 lower die includes a top surface supporting a strip of material to be formed into a  
4 part after a stripper plate coupled to the upper die contacts the strip of material;  
5 a part measurement sensor located in the lower die, wherein the sensor  
6 measures a critical dimension of the part;  
7 a part forming rail coupled to the lower die, wherein the forming rail and  
8 the upper die form the critical dimension of the part; and  
9 a press controller coupled to the press machine and the sensor, wherein the  
10 controller processes a measurement signal from the part measurement sensor of  
11 the critical dimension of the part, compares the measurement signal to a

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12 predetermined threshold value, and generates a command signal to the press  
13 machine to adjust the forming rail based on the measurement signal.

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1 12. The measurement system according to claim 11, wherein the sensor measures the  
2 critical dimension of the part while the part is in the lower die.

1 13. The measurement system according to claim 12, wherein the forming rail is  
2 coupled to a servo and the press controller adjusts the servo based on the  
3 measurement from the sensor of the critical dimension of the part.

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1 14. The measurement system according to claim 13, wherein the upper die includes a  
2 knocker that contacts the forming rail to form the critical dimension of the part.

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1 15. The measurement system to claim 11, wherein the sensor is an analog output  
2 proximity switch located in the lower die.

1 16. The measurement system according to claim 11, wherein the press machine is a  
2 progressive punch press.

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1 17. The measurement system according to claim 16, wherein the sensor generates a  
2 first measurement signal prior to the upper die punching the strip of material and a  
3 second measurement signal after the upper die punches the strip of material.

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1 18. The measurement system according to claim 17, wherein the press controller  
2 generates an average measurement signal based on the first measurement signal  
3 and the second measurement signal.

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1 19. The measurement system according to claim 18, wherein the press controller  
2 compares the average measurement signal to the predetermined threshold to  
3 determine whether to adjust the forming rail.

1 20. The measurement system according to claim 19, wherein the sensor generates the  
2 first measurement signal when the press machine is between 130 degrees and 150  
3 degrees.

1 21. The measurement system according to claim 20, wherein the sensor generates the  
2 second measurement signal when the press machine is between 180 degrees and  
3 360 degrees.

1 22. A method of measuring a critical dimension of a part in a press machine, the  
2 method including the steps of:  
3 feeding a strip of material through the press machine, wherein the machine  
4 includes a lower die coupled to an upper die and the lower die includes a top  
5 surface supporting the strip of material;  
6 forming the strip of material into the part, wherein a stripper plate coupled  
7 to the upper die contacts the strip of material and the upper die punches the strip  
8 of material;  
9 measuring the critical dimension of the part with a part measurement  
10 sensor located in the lower die;  
11 processing a measurement signal from the part measurement sensor of the  
12 critical dimension of the part, wherein a press controller compares the  
13 measurement signal to a predetermined threshold value, and generates a command  
14 signal to the press machine; and  
15 adjusting a forming rail coupled to the lower die based on the command  
16 signal from the press controller.

1 23. The method according to claim 22, wherein the forming rail is coupled to a servo  
2 and the press controller adjusts the servo based on the measurement from the  
3 sensor of the critical dimension of the part.

1 24. The method according to claim 23, wherein the upper die includes a knocker that  
2 contacts the forming rail to form the critical dimension of the part.

1 25. The method according to claim 22, wherein the sensor is an analog output  
2 proximity switch located in the lower die.

1 26. The method according to claim 22, wherein the press machine is a progressive  
2 punch press.

1 27. The method according to claim 26, wherein the sensor generates a first  
2 measurement signal prior to the upper die punching the strip of material and a  
3 second measurement signal after the upper die punches the strip of material.

1 28. The method according to claim 27, wherein the press controller generates an  
2 average measurement signal based on the first measurement signal and the second  
3 measurement signal.

1 29. The method according to claim 28, wherein the press controller compares the  
2 average measurement signal to the predetermined threshold to determine whether  
3 to adjust the forming rail.

1 30. The method according to claim 29, wherein the sensor generates the first  
2 measurement signal when the press machine is between 130 degrees and 150  
3 degrees.

1 31. The method according to claim 30, wherein the sensor generates the second  
2 measurement signal when the press machine is between 180 degrees and 360  
3 degrees.

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